

AMENDMENTS TO THE CLAIMS:

Please amend claims 1, 3, 7, 11-14, 17, 25-27 and 41-42, cancel claims 28-40, and add claims 43-55 as follows:

1. (Currently Amended) A method of depositing a silicon germanium film on a substrate comprising:

~~placing the~~ providing a substrate within a process chamber;

heating the substrate to a temperature in a range from about 500°C to about 900°C;

~~maintaining at a pressure in a range from about 0.1 Torr to about 200 Torr;~~

~~providing~~ exposing the substrate to a deposition gas comprising SiH₄, GeH₄, HCl, a carrier gas and at least one dopant gas; and

depositing ~~the a~~ silicon germanium film ~~material~~ epitaxially on the substrate.

2. (Original) The method of claim 1, wherein the at least one dopant gas is a boron containing compound selected from the group consisting of BH₃, B₂H₆, B₃H₈, Me₃B, Et₃B and derivatives thereof.

3. (Currently Amended) The method of claim 2, wherein the silicon germanium film ~~material~~ material is deposited with a boron concentration in a range from about 1×10^{20} atoms/cm³ to about 2.5×10^{21} atoms/cm³.

4. (Original) The method of claim 1, wherein the at least one dopant gas includes an arsenic containing compound or a phosphorus containing compound.

5. (Original) The method of claim 1, wherein the carrier gas is selected from the group consisting of H₂, Ar, N₂, He and combinations thereof.

6. (Original) The method of claim 5, wherein the deposition gas further comprises a member selected from the group of consisting of a carbon source, Cl_2SiH_2 and combinations thereof.
7. (Currently Amended) The method of claim 5, wherein the temperature is in a range from about 600°C to about 750°C and the process chamber is at a pressure in a range from about 0.1 Torr to about 200 Torr.
8. (Original) The method of claim 5, wherein the silicon germanium film is grown to a thickness in a range from about 100 Å to about 3,000 Å.
9. (Original) The method of claim 8, wherein the silicon germanium film is deposited within a device used for CMOS, Bipolar or BiCMOS application.
10. (Original) The method of claim 9, wherein a fabrication step is selected from the group consisting of contact plug, source/drain extension, elevated source/drain and bipolar transistor.
11. (Currently Amended) The method of claim 1, wherein the silicon germanium ~~film~~ material is deposited ~~to~~ with a first thickness, therein SiH_4 is replaced by Cl_2SiH_2 , and a second silicon germanium ~~film~~ material is deposited ~~to~~ with a second thickness on the silicon germanium ~~film~~ material.
12. (Currently Amended) The method of claim 1, wherein a silicon-containing ~~film~~ material is deposited ~~to~~ on the substrate before the silicon germanium ~~film~~ material.
13. (Currently Amended) The method of claim 12, wherein the silicon-containing ~~film~~ material is deposited ~~from~~ by a deposition process gas comprising Cl_2SiH_2 .
14. (Currently Amended) A selective epitaxial method ~~for~~ of growing a silicon germanium film on a substrate comprising:

~~placing the proving a substrate within a process chamber at a pressure in a range from about 0.1 Torr to about 200 Torr;~~

heating the substrate to a temperature in a range from about 500°C to about 900°C;

~~providing~~ exposing the substrate to a deposition gas comprising SiH₄, a germanium source, an etchant source, a carrier gas and at least one dopant gas; and

growing selectively ~~the~~ a silicon germanium ~~film~~ material with a dopant concentration in a range from about 1×10^{20} atoms/cm³ to about 2.5×10^{21} atoms/cm³.

15. (Original) The method of claim 14, wherein the germanium source is selected from the group consisting of GeH₄, Ge₂H₆, Ge₃H₈, Ge₄H₁₀ and derivatives thereof.

16. (Original) The method of claim 15, wherein the carrier gas is selected from the group consisting of H₂, Ar, N₂, He and combinations thereof.

17. (Currently Amended) The method of claim 16, wherein the temperature is in a range from about 600°C to about 750°C and the process chamber is at a pressure in a range from about 0.1 Torr to about 200 Torr.

18. (Original) The method of claim 17, wherein the etchant source is selected from the group consisting of HCl, SiCl₄, CCl₄, H₂CCl₂, Cl₂, derivatives thereof and combinations thereof.

19. (Original) The method of claim 14, wherein the at least one dopant gas is a boron containing compound selected from the group consisting of BH₃, B₂H₆, B₃H₈, Me₃B, Et₃B and derivatives thereof.

20. (Original) The method of claim 14, wherein the at least one dopant gas is selected from the group consisting of an arsenic containing compound and a phosphorus containing compound.

21. (Original) The method of claim 14, wherein the deposition gas further comprises a member selected from the group consisting of a carbon source, Cl_2SiH_2 and combinations thereof.

22. (Original) The method of claim 17, wherein the silicon germanium film is grown to a thickness in a range from about 100 Å to about 3,000 Å.

23. (Original) The method of claim 22, wherein the silicon germanium film is deposited within a device used for CMOS, Bipolar or BiCMOS application.

24. (Original) The method of claim 23, wherein a fabrication step is selected from the group consisting of contact plug, source/drain extension, elevated source/drain and bipolar transistor.

25. (Currently Amended) The method of claim 14, wherein the silicon germanium ~~film~~ material is deposited ~~to~~ with a first thickness, therein SiH_4 is replaced by Cl_2SiH_2 , and a second silicon germanium ~~film~~ material is deposited ~~to~~ with a second thickness on the silicon germanium ~~film~~ material.

26. (Currently Amended) The method of claim 14, wherein a silicon-containing ~~film~~ material is deposited ~~to~~ on the substrate before the silicon germanium ~~film~~ material.

27. (Currently Amended) The method of claim 26, wherein the silicon-containing ~~film~~ material is deposited ~~from~~ by a deposition process gas comprising Cl_2SiH_2 .

28-40. (Cancelled)

41. (Currently Amended) A selective epitaxial method ~~for growing a silicon-containing~~ of depositing a silicon germanium containing film on a substrate comprising:

~~placing the~~ providing a substrate within a process chamber ~~at a pressure in a range from about 0.1 Torr to about 200 Torr;~~

heating the substrate to a temperature in a range from about 500°C to about 900°C;

~~providing~~ exposing the substrate to a deposition gas comprising Cl_2SiH_2 , a first germanium source, HCl and a carrier gas;

depositing a first silicon-containing layer on the substrate;

~~providing~~ exposing the substrate to a second deposition gas comprising SiH_4 , a second germanium source, HCl and a second carrier gas; and

depositing a second silicon-containing layer on the first silicon-containing layer.

42. (Currently Amended) A method of depositing a silicon-containing film on a substrate comprising:

placing ~~the~~ a substrate within a process chamber;

heating the substrate to a temperature in a range from about 500°C to about 900°C;

~~maintaining the process chamber at~~ a pressure in a range from about 0.1 Torr to about 200 Torr;

~~providing~~ exposing the substrate to a deposition gas comprising a silicon-containing gas, a germanium source, HCl, at least one dopant gas and a carrier gas selected from the group consisting of N_2 , Ar, He and combinations thereof; and

depositing selectively ~~the~~ a silicon-containing ~~film~~ material epitaxially on the substrate.

43. (New) A method of depositing a silicon germanium film on a substrate comprising:

providing a substrate within a process chamber;

exposing the substrate to a first deposition gas comprising SiH_4 , a first germanium source, HCl and a carrier gas to deposit a first silicon germanium containing material with a first thickness on the substrate; and

exposing the substrate to a second deposition gas comprising Cl_2SiH_2 and a second germanium source to deposit a second silicon germanium containing material with a second thickness on the first silicon germanium containing material.

44. (New) The method of claim 43, wherein the first silicon germanium containing material is selectively deposited on the substrate.

45. (New) The method of claim 44, wherein the first deposition gas further comprises at least one dopant gas.

46. (New) The method of claim 45, wherein the first silicon germanium containing material has a dopant concentration in a range from about 1×10^{20} atoms/cm³ to about 2.5×10^{21} atoms/cm³.

47. (New) The method of claim 46, wherein the at least one dopant gas comprises an element selected from the group consisting boron, arsenic, phosphorus and combinations thereof.

48. (New) The method of claim 47, wherein the at least one dopant gas comprises a boron containing compound selected from the group consisting of BH_3 , B_2H_6 , B_3H_8 , Me_3B , Et_3B and derivatives thereof.

49. (New) The method of claim 43, wherein the second silicon germanium containing material is selectively deposited on the substrate.

50. (New) The method of claim 49, wherein the second deposition gas further comprises HCl and at least one dopant gas.

51. (New) The method of claim 50, wherein the at least one dopant gas comprises an element selected from the group consisting boron, arsenic, phosphorus and combinations thereof.

52. (New) The method of claim 51, wherein the at least one dopant gas comprises a boron containing compound selected from the group consisting of BH_3 , B_2H_6 , B_3H_8 , Me_3B , Et_3B and derivatives thereof.

53. (New) The method of claim 43, wherein the first and second germanium sources are independently selected from the group consisting of GeH_4 , Ge_2H_6 , Ge_3H_8 , Ge_4H_{10} and derivatives thereof.

54. (New) The method of claim 53, wherein the first and second thicknesses are independently in a range from about 100 Å to about 3,000 Å.

55. (New) The method of claim 54, wherein the substrate is heated to a first temperature during the exposure of the first deposition gas and to a second temperature during the exposure of the second deposition gas, wherein the first and second temperatures are independently a temperature within a range from about 500°C to about 900°C.